Perspectives on Residential µCHP

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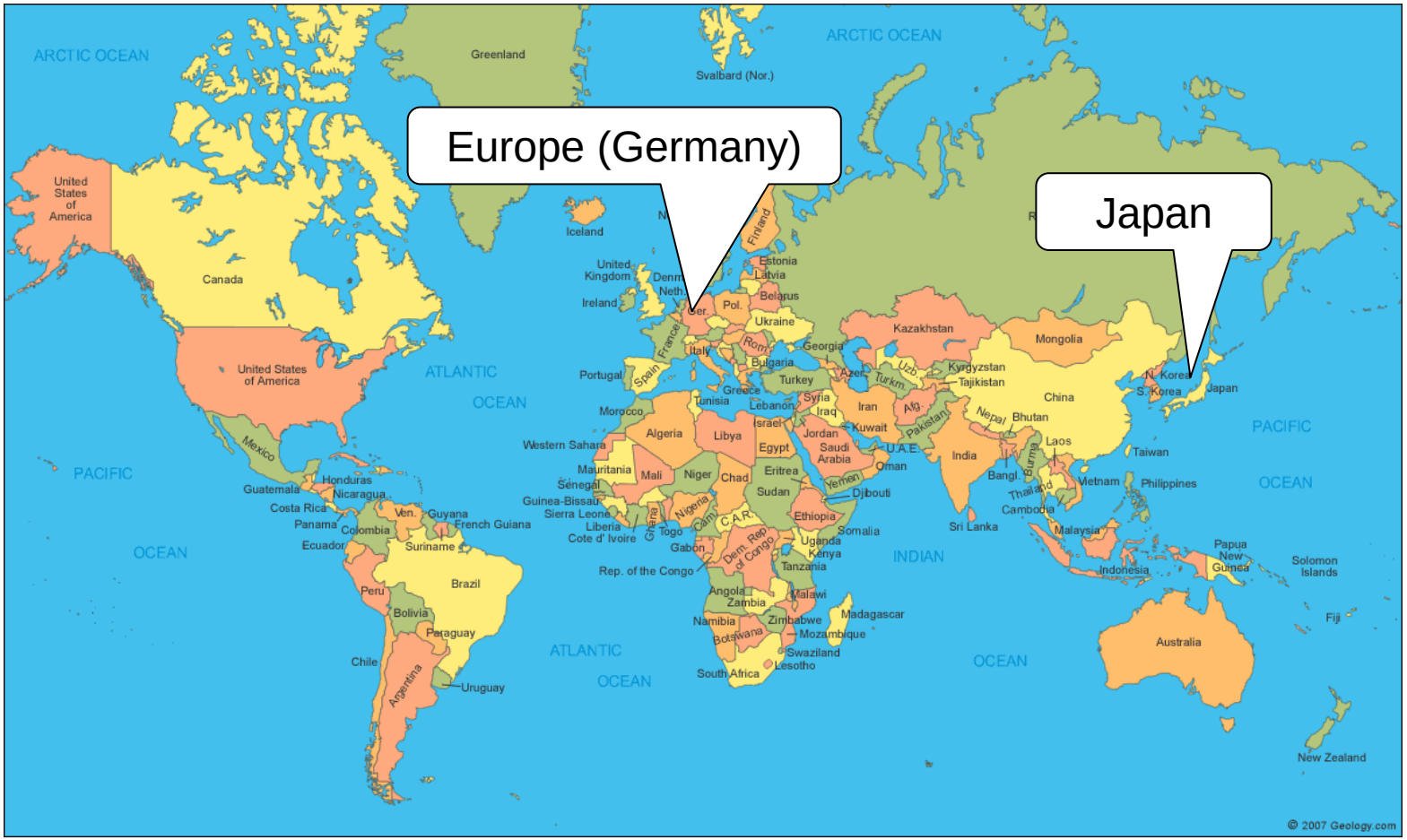
GENSETS Program Kickoff

October 21-22, 2015, Chicago, Illinois

World Market



North American Market Opportunity

4,500,000

Number of gas water heaters sold annually in the US

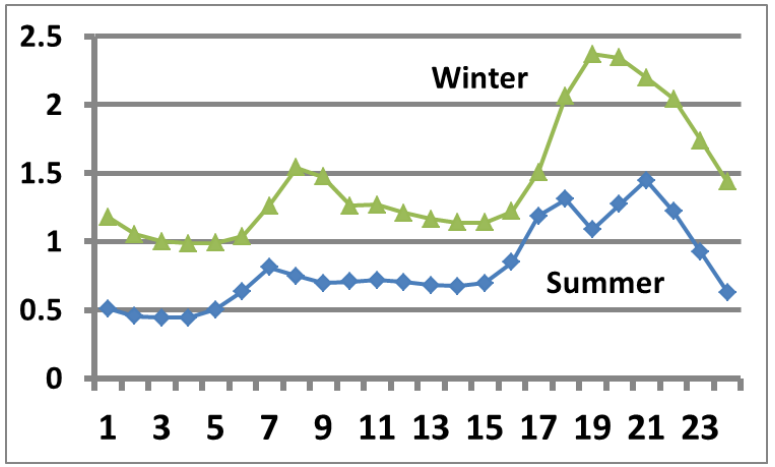
300,000

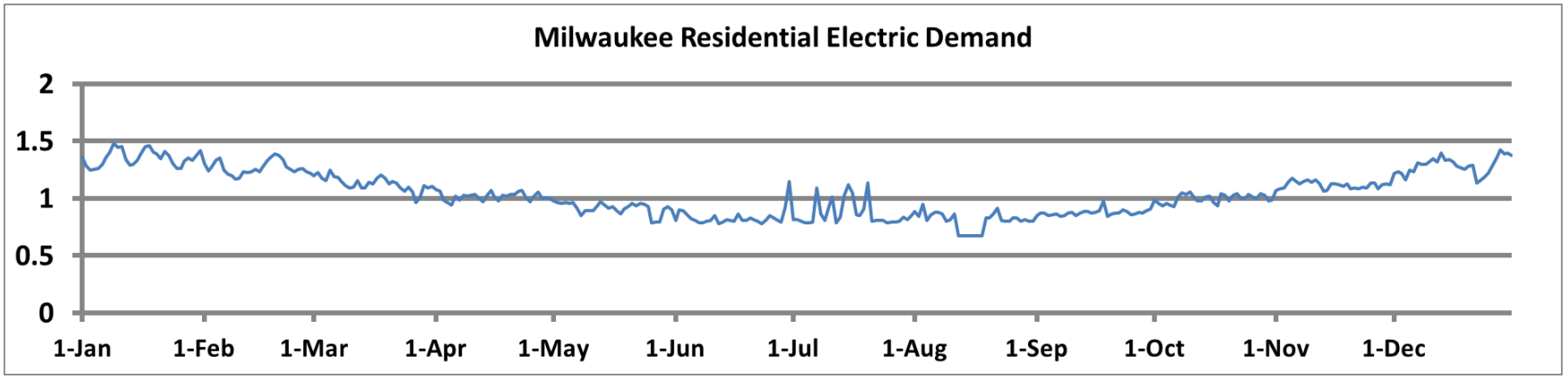
Number of boilers sold annually in the US

Energy Use Profiles-Electric

1.03 kW

The average daily electric demand

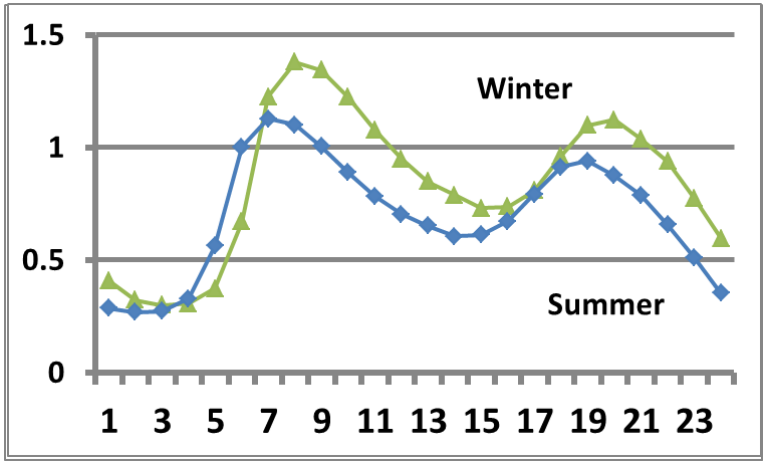


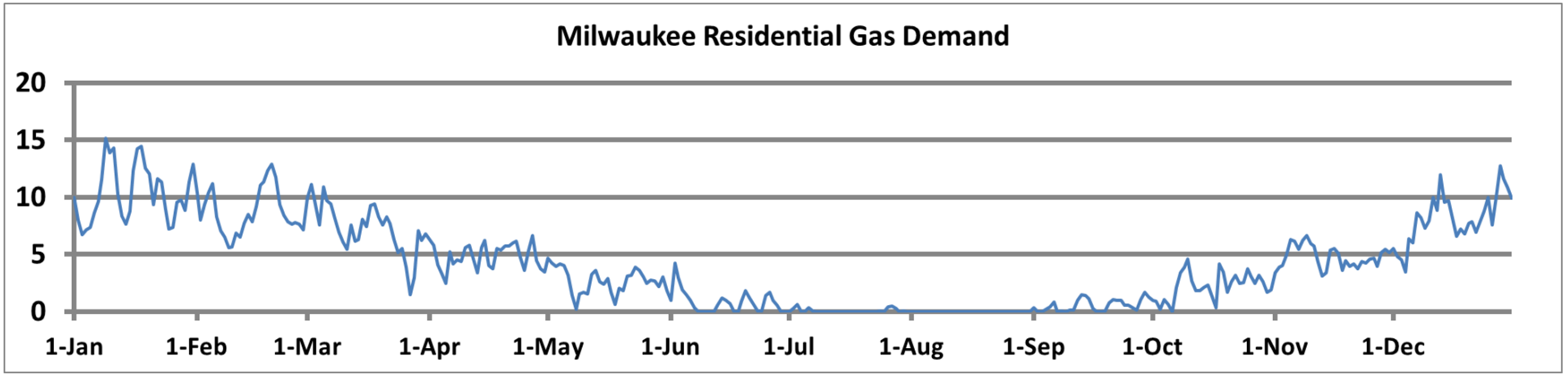


Energy Use Profiles-Thermal

0.75 kW

The average daily thermal (hot water) demand





Load Management

Thermally Led vs. **Electrically Led**

Considerations

- **Multiple Loads**
- **Storage**
- **Season Variability**
- **Net-metering**
- **Standby Generation**
- **Heat Dump**

Existing Solutions (Alternatives to micro-CHP)

Value Proposition

Society

Save energy users $10 billion per year

Spur $40-$80 billion in new capital investment

Save 1% of all energy use in the United States (1 Quad)

Reduce emissions by the equivalent of removing 25 million cars from the road

Buyer

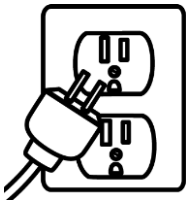
Provide heat and power more cheaply than by existing or alternative methods

Regulatory Considerations

- Interconnection and Net Metering
  - State/Utility/Municipal
- Emissions
  - Federal (EPA) / State (CARB)
- Potable Water
  - Materials
  - Cross Contamination

Installation Considerations

- Multiple Trades
  - Electrical
  - Plumbing



- Location/Space/Access
- System Integration
  - Auxiliary Heating Equipment
  - Control Interface
- Environment

Conclusion

- Must have a value proposition for the customer
- Don’t wait to look at the balance of plant and system integration
- Don’t ignore technology alternatives
- Know the regulatory environment
- Plan for installation early


Questions